

Confidential

Mailed
out.

MAY 31 1957

Grant No. 52 R.

Playtex Park Research Institute
Final Activity Report
on
Grant Expiring December 31, 1956
of

Adrian Kantrowitz, M.D.
Name of Grantee

Maimonides Hospital of Brooklyn
Name of Institution

Pediatric Cardiovascular Surgical Research
Title of Grant

The funds supplied by Playtex Park Institute were used in part to support the three projects, summaries of which are included.

Signature of Grantee

IMPORTANT: Please attach list of papers published, presented or in process of preparation which report work aided by this grant, as well as a list of professional personnel, if any, supported and/or trained under this grant.

Where more space is required, attach additional pages hereto and sign the last page.

SOME PHYSIOLOGIC OBSERVATIONS CONCERNING
INTERNAL MAMMARY ARTERY LIGATION

Adrian Kantrowitz, M.D. and Sheuka Dibra, M.D.

Recently it has been advocated that ligation of the internal mammary arteries may prove helpful in the treatment of occlusive coronary artery disease. The rationale offered is that more blood would be shunted through a proximal side branch of the internal mammary artery e.g., pericardiophrenic, to the pericardium and thence by extra-coronary collaterals to the coronary system. To study this thesis, an analogous experiment was performed in mongrel dogs.

Pressures and blood flows through one iliac artery were measured with and without clamping the contralateral iliac artery. Controlled observations were made and it was found that clamping the iliac artery one side did not appreciably alter the pressures or flows in the other iliac artery.

A second series of observations was made in mongrel dogs where only one internal mammary artery was ligated. When the animal was sacrificed several weeks later there did not appear to be any substantial difference in the size of the pericardiophrenic arteries.

These results tended to invalidate the theory that flow in the coronary bed could be increased by internal mammary ligation. Longer term studies are being conducted in order to determine whether or not new collateral channels develop.

THE CONTINUOUS MEASUREMENT OF BLOOD VOLUME

Adrian Kantrowitz, M.D., Norton Ritz, M.D., John F. Marion, A.B., David F. Rearick, M.S. and Alfred Hurwitz, M.D.

Methods aimed at developing a system of continuously, and automatically monitoring the blood volume of patients undergoing major surgery have been explored in this laboratory. Radioactive chromium ⁵¹ tagged red cells were injected at a constant rate of 6 cc per hour into the blood stream of experimental animals. The concentration of radioactive material in the animal's circulation was measured at regular time intervals by withdrawing samples of venous blood into a well-type scintillation counter. If there was no change in the animal's blood volume, the concentration of radioactive material would rise at a constant rate i.e., the slope of a line where concentrations were plotted against time would be constant. When the blood volume was reduced suddenly the slope changed correspondingly.

Experiments in mongrel dogs revealed that blood volume could be followed continuously for periods of time up to 4 hours with an error of less than 5%. Efforts are being directed at making this monitoring entirely automatic with a digital readout.

PATHOLOGIC PHYSIOLOGY IN CONSTRICTIVE PERICARDITIS

AND THE EFFECT OF PERICARDIECTOMY

David T. Dresdale, M.D., Murray A. Greene, M.D., Usuf Z. Yuceoglu, M.D., Maurice Lunger, M.D. and Adrian Kantrowitz, M.D.

Four patients, ages 51-57, who underwent corrective surgery for constrictive pericarditis are the subjects of this report. Clinical evaluation and right heart catheterizations were performed in each patient preoperatively and four and six months postoperatively in the two patients who survived surgery. Direct intracardiac pressures were recorded in three patients during surgery immediately before and following pericardiectomy.

In each patient clinical manifestations congestive heart failure and constrictive pericarditis were present preoperatively. Right heart hemodynamics were consistent with constrictive pericarditis. In two patients the pulmonary "wedge" pattern suggested constriction of the left heart.

Cyclic pressure patterns in the right heart were unchanged when recorded during surgery prior to pericardiectomy. In addition left ventricular pattern demonstrated evidence to suggest diastolic phase abnormalities of each chamber.

Two patients who survived were followed postoperatively. Marked improvement in clinical status occurred in both. Right heart catheterization four and six months respectively after surgery revealed marked improvement in hemodynamics.

This report will stress clinical-physiologic correlation in constrictive pericarditis with emphasis upon (1) left heart function and (2) mechanical vs. myocardial factors.